RARE SPECIES SURVEYS OF THE MANITOBA CONSERVATION DATA CENTRE, 2001

Manitoba Conservation Data Centre MS Report 02-02

March 2002

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Executive Summary

Cataloguing the location of rare species occurrences and describing abundance, habitat, and possible threats are critical to the sound stewardship of Manitoba's biodiversity. Informed decisions relating to land use, protection, species status, and the direction of future research depend on the availability of these basic data.

Staff of the Manitoba Conservation Data Centre conducted extensive surveys of rare species in southern Manitoba between May 11 and September 21, 2001. Priority activities included monitoring known rare species occurrences and surveying for new records. Targeted surveys of 22 species were conducted; surveys of seven of these species (*Buchloë dactyloides, Celtis occidentalis, Dalea villosa* var. *villosa, Krigia biflora, Mimulus glabratus, Spiranthes magnicamporum,* and *Symphyotrichum sericeum*) comprised the majority of field work. A summary of field activities, current status, species description, habitat preferences, current protection, management issues, and future work required is presented for each of these seven species. Brief descriptions, limited to a summary of field work conducted and related issues, follows for the 15 additional targeted species. Rare species encountered incidentally are also reported. In total, field work in 2001 resulted in the update of 61 previously known rare species occurrences and the documentation of 79 new occurrences.

Each surveyed species possesses unique biological features that influence distribution and abundance in Manitoba. Habitat, phenology, and historic and current land use practices influence the possible threats to these rare species, and the management practices required to maintain them. Many rare species in Manitoba are limited by the distribution and abundance of the habitat upon which they depend. Habitat loss (historic and continued) has had a significant, negative impact on a number of species reported herein. The historic extent of tall-grass and mixed-grass prairie, for example, has declined dramatically since European settlement. Other habitats, such as springs and sandhills, are naturally rare landscape features.

All information collected has been incorporated into a rare species database maintained by the Conservation Data Centre. The information contained therein is available to parties engaged in making management decisions affecting the maintenance of biodiversity in Manitoba.

Acknowledgements

Collection of the valuable information contained within this report would not have been possible without the support of the Habitat Stewardship Program, Canadian Wildlife Service, Environment Canada, Manitoba Conservation (Wildlife and Ecosystem Protection Branch), Critical Wildlife Habitat Program, Manitoba Habitat Heritage Corporation, Manitoba Special Conservation Fund, and the Manitoba Museum of Man and Nature.

Ken De Smet's knowledge of the land and landowners of southwestern Manitoba greatly increased the efficiency and success of the extensive surveys conducted in that area of the province. Dr. Bruce Ford helped in the identification of target species and landscapes, and readily provided access to the resources available at the University of Manitoba herbarium. Elizabeth Punter also aided in focusing survey efforts, through both conversations and written recommendations made in previous rare plant survey reports. Laura Reeves, Christie Borkowsky, and John Tkachuck of the Tall Grass Prairie Preserve provided advice and assistance. Valuable volunteer field assistance was provided by Richard Caners, Lisa Matthias, and Janet Skavinski. Jason Greenall and Jim Duncan helped in the editing of this document.

The advice and other aid provided by local landowners, land managers and resource users, too numerous to mention here, was invaluable in both the relocation of known records and in searching for new occurrences.

Marjorie Hughes, under contract with the Canadian Wildlife Service and supported by the Manitoba Conservation Data Centre, conducted extensive surveys in 2001 for three species: silky prairie-clover (*Dalea villosa* var. *villosa*), small white ladies'-slipper (*Cypripedium candidum*), and western spiderwort (*Tradescantia occidentalis*). Due to extensive collaboration between Ms. Hughes and the authors of this report, in both field work and data management, the results of these surveys are summarized within. More detailed descriptions of field activities and results can be found in Hughes (2001).

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Introduction

Collecting information on rare species is an important tool in determining status and making management decisions. Land managers also benefit from information that helps them determine what activity or land use is appropriate for an area that contains rare species. This information also feeds into the general status assessments. General status ranks incorporate information on population size, number of occurrences, geographic distribution, trend in distribution, threats to population, and threats to habitat (Canadian Endangered Species Conservation Council (CESCC) 2001). This process identifies data gaps for groups that are assessed thereby increasing the profile of these species. Where data gaps are identified, these gaps can be addressed by gathering new information that will be incorporated into the general status ranks. Through these steps, species that may be at risk are identified, and can be targeted for conservation. Future studies into the biology or ecology of rare species could build on the information gathered in the course of this survey.

In Manitoba, 24% of species tracked by the Conservation Data Centre (CDC) are rare (ranked between S1 and S3). Of these rare species, 2% are rare globally (ranked G1 to G3). Many Great Plains species reach the northern limit of their range in Manitoba, and these populations may represent remnants of formerly widespread plants. Peripheral populations may have unique adaptations to allow them to survive at the edge of their range; these adaptations represent important aspects of the genetic diversity of a species (White and Johnson 1980). Many rare species in Manitoba occur in the mixed-grass and tall-grass prairie associations; both have been negatively affected by human activities, including intensive agriculture and urbanization. It is therefore important for the survival of rare species to conserve the few remaining fragments of habitat.

This field report builds on the body of work previously conducted on rare plants in the province. In particular, knowledge gained through the extensive field research conducted by former CDC employee Elizabeth Punter has guided much of the work presented in this report. Despite the work already done, there are many gaps in the information available on rare plants, especially concerning biology and ecology of many species. Rare species distributions in Manitoba remain poorly understood. Boivin conducted the last major floristic survey of Manitoba in the late 1950s (White and Johnson 1980), and information for many species has not been updated since then.

Methods

Before conducting field work, a prioritized target species list was produced. Species targeted for surveying had one or more of the following characteristics:

- Listed as Threatened or Endangered by the Manitoba *Endangered Species Act* (MESA) or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).
- Manitoba Conservation Data Centre SRANK of S1 or S2 (see Appendix A for information on the Conservation Data Centre Ranking System).
- Last known survey more than 5 years previous.
- Identified through previous CDC fieldwork as a priority for surveying.
- Identified by local experts as a priority for surveying.
- Met one or more of the above criteria and not being surveyed in 2001 by any other agency.

The target species list was filtered further based on species phenology, habitat preferences, and geographic range of occurrence. To maximize efficiency, lower priority species were surveyed if their characteristics coincided with those of a higher priority species that was being surveyed.

In order to take advantage of staff expertise, surveys focused on plant species. Surveys of animal species were limited to incidental observations, surveys of rare bird species in southwest Manitoba under the direction of the Manitoba CDC's Species at Risk Biologist Ken De Smet, and the collection of dragonflies and damselflies as part of the Manitoba Dragonfly Survey (Appendix B).

Twenty-two species were identified as priorities for survey. Herbarium specimens, field guides, photographs, reports and knowledgeable individuals were consulted prior to field excursions to ensure proper field identification of target species and select locations for surveys.

Field work took place between May 11 and September 21, 2001. Activities included monitoring known records of rare species and surveying for new occurrences.

The following information was recorded for each rare species occurrence encountered:

- Estimates of population size and areal extent.
- Habitat information at the population (other species present, slope position, aspect, disturbance) and landscape (landform, soil properties, local land-use) levels.
- Possible threats to the occurrence.
- GPS co-ordinates (new occurrences only) and other location information.
- Images (slide, print, and/or digital) of most occurrences.

Specimens were collected for new occurrences of targeted plant species where legally allowed, but only when populations were large enough that collection would not compromise long-term survival. Collection permits were obtained from the Parks and Wildlife Branches of Manitoba Conservation where appropriate. Species encountered incidentally for which positive field identification could not be made were collected for later identification. Nomenclature of surveyed species follows Kartesz (1999) for plants, Preston (1982) for reptiles, Banfield (1974) for mammals, and the American Ornithologists Union (1998) for birds. Species conservation ranks follow NatureServe (2001). All photographs are copyright of the Manitoba CDC.

Following the preparation of this report, landowners and government agencies responsible for lands containing rare species surveyed in 2001 will be sent brief, species-specific summaries of the surveys conducted on their lands.

Results

Targeted Surveys

Targeted surveys of 22 species were conducted in 2001; surveys of 7 of these species comprised the majority of field work, however. A summary of field activities, current status, species description, habitat preferences, current protection, management issues, and future work required is presented for each of these 7 species. Brief descriptions, limited to a summary of field work conducted and related issues, follow for the 15 additional targeted species.

Buffalo Grass (*Buchloë dactyloides*)

COSEWIC: Threatened, MESA: not listed, Conservation Status Ranks: G4G5, N1, S1

Description and Habitat Preferences

Buffalo grass (family Poaceae) is a dioecious sod-forming grass, spreading by stolons to form clones up to 2 m across. A bur-like structure encloses the female spikelets; these burs disperse intact. The male plants resemble depauperate specimens of blue grama grass, with curled leaf blades and short one-sided spikes. The culms are mostly less than 12 cm high.

In Canada, buffalo grass grows in clay to clay-loam soils, mostly below shale outcrops. It occurs within the Souris River Valley in Manitoba (Figure 2), and is associated with gleyed black solonetzic soils. It is restricted to areas of unbroken native pasture. Grazing and moderate trampling may be required to reduce competition from other grasses (Harms 1997).

Data collected in 2001

Manitoba CDC staff searched 19 quarter-sections in the Souris River and Blind River Valleys near Coulter. These searches yielded three new occurrences, and an extension of the single previously known occurrence in Manitoba. The information gathered was added to the CDC database.

An earlier report (Harms 1997) suggested that Manitoba had a single population of buffalo grass in a 3 km long band along the Souris River. This study identified small populations to the north and south of this main occurrence of buffalo grass. Two small populations were identified in the Blind River Valley to the north (Figure 1). A single population was identified to the south near the border between North Dakota and Manitoba. These populations do not likely reflect an expansion of the species, but due to the difficulty in identifying this species without floral structures intact, these small occurrences were likely overlooked in previous research.

Figure 1. Buffalo grass (*Buchloë dactyloides*) habitat in the Blind River Valley.

Current Protection and Management Issues

Currently, buffalo grass has no legal protection in Manitoba. All known occurrences are on privately owned land and adjacent road allowances. Changes from current land use could threaten Manitoba's population. Cattle and horses graze much of the Souris River valley. The distribution of buffalo grass in Canada is extremely limited, as it occurs only along the Souris River Valley and at two locations in the Blind River Valley. Buffalo grass clones are found discontinuously over 235 ha on 18 quarter-sections of land. Any large-scale alterations in drainage or flow of the river could negatively influence extant populations. In November 2001, COSEWIC updated the status of buffalo grass to Threatened based on the use of quantitative criteria.

Future work required

A status summary report is currently in preparation for the Manitoba Endangered Species Advisory Committee. Receptive landowners should be encouraged to preserve buffalo grass populations on their property through conservation agreements.

Potential buffalo grass habitat along the western bank of the Souris River was not surveyed in 2001; this area should be targeted for future searches.

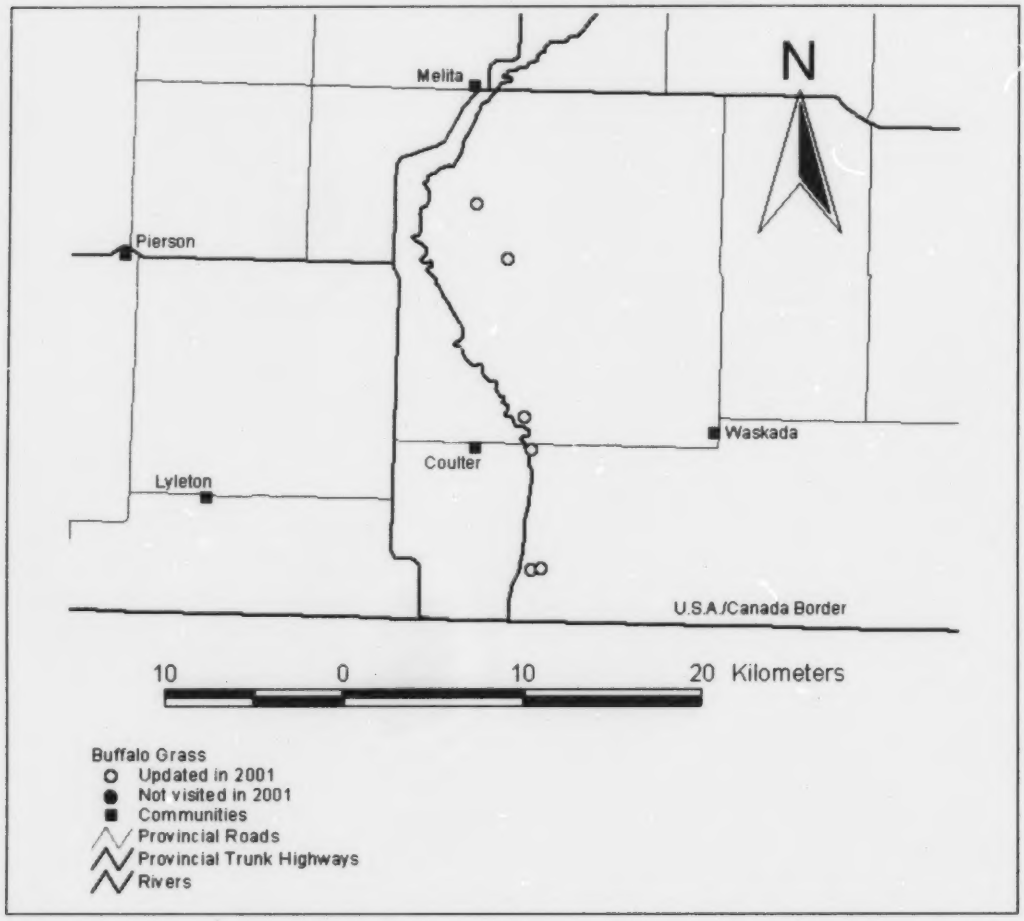


Figure 2. Known occurrences of buffalo grass (*Buchloë dactlyoides*) in Manitoba. Occurrences surveyed in 2001 are indicated.

Common Hackberry (*Celtis occidentalis*)

COSEWIC: not listed, MESA: not listed, Conservation Status Ranks: G5, N?, S1

Description and Habitat Preferences

Hackberry (family Ulmaceae) is a small deciduous tree with ascending or spreading branches that form a large crown. The bark of mature individuals is greyish-brown and deeply furrowed. Branches are alternate, as are leaves. Leaves are simple, oval to lance-shaped, 5-15 cm long, 3/5 as wide, tapered to the tip, sharp toothed to the middle, and lop-sided at the base. The minute, green flowers appear with, or before, the leaves. Orange-red berries turn dark purple at maturity.

Hackberry has a very localized distribution in Manitoba. The largest populations are found on beach ridges at the south end of Lake Manitoba, at Delta Marsh. Additional populations occur in dry prairie habitats of the sandhills of southwestern Manitoba (Figure 4). Sandhill populations are typically found growing on the southeastern slopes of sand ridges, and are often limited to fewer than 20 mature individuals.

Data Collected in 2001

Surveying efforts concentrated on the sandhill populations of the southwest. One previously known site at the Manitoba Habitat Heritage Corportation (MHHC) property on the south side of P.R. 345 in the Lauder Sandhills was surveyed on July 26. The three individuals observed appeared to be in poor health; leaves were chlorotic and contained numerous galls (Figure 3). In addition, 20-50 % of the upper crown branches were dead. A second previously known occurrence, 2 km east on the north side of P.R. 345, was surveyed as well. The existence of this population has been known since 1995 (Ken De Smet, Manitoba Conservation, pers. comm.), 2001 surveys represent the first formal documentation and description, however. Approximately 60 mature individuals, growing as part of a mixed stand with green ash (*Fraxinus pennsylvanica*), Manitoba maple (*Acer negundo*), and American elm (*Ulmus americana*), was observed. This stand was located on the mid-upper reaches of an east-facing sand ridge, in a large concave hollow. A single tree, located approximately 200 m away in a midslope position on a southeast-facing sand ridge, was also recorded at this site. Many individuals in this population were chlorotic and galled.

Additional surveys of hackberry were conducted on August 8. Another previously known, but as yet undocumented, stand of 15 mature individuals located on the upper portion of an east-facing slope was surveyed on a sandhill-dominated section of crown land 4.3 km northeast of the MHHC property population. Another single tree, 100 m north on the east side of the same sand ridge, was observed. A survey of a small sandhill complex on the west side of Oak Lake resulted in the discovery of a new population of hackberry, a northwestern extension of the species' range in North America. Two mature individuals were observed, growing approximately 60 m apart, on the lower east-facing slopes of two sand ridges. Numerous hackberry saplings surrounded one of these individuals, located near the edge of an aspen stand. This population was the only one surveyed in 2001 that exhibited any significant regeneration. Most saplings were heavily browsed, however, and none exceeded 1.5 m in height.

Figure 3. Chlorotic leaves and galls of common hackberry (*Celtis occidentalis*) at MHHC property.

Current Protection and Management Issues

The hackberry stand located on the MHHC property is afforded some protection through MHHC's mandate to conserve and restore wildlife habitat. With the exception of the MHHC property, all sandhill populations are subject to cattle grazing. The effect of grazing on these populations is unknown. All populations are located in sandhill areas that are unsuitable for most agricultural purposes, save grazing. The potential exists for damage due to oil exploration activities, especially in the Oak Lake population as it is near the Virden Petroleum Field.

Future Work Required

Large portions of the Lauder, Oak Lake, Kemnay, and Routledge Sandhills, as well as numerous smaller sandhill complexes in between, were surveyed in 2001. With the exception of the occurrences reported here, however, no other populations of hackberry

were encountered. The distribution of hackberry in southwestern Manitoba is limited, very disjunct, and populations are small and appear to have low reproductive rates. In addition, many individuals appear to be under considerable disease stress. Protection, through conservation agreements or otherwise, of an additional sandhill population would help to ensure the continued presence of hackberry in southwestern Manitoba. A species status summary report for the Manitoba Endangered Species Advisory Committee is in preparation.

Additional hackberry populations may exist in areas not surveyed in 2001, especially Jiggins Bluff and the Portage Sandhills. Land owners and managers should be made aware of the presence of this species on their property, and management techniques that minimize negative impacts should be discussed. Research focused on determining the cause of apparent low reproductive rates and disease is critical.

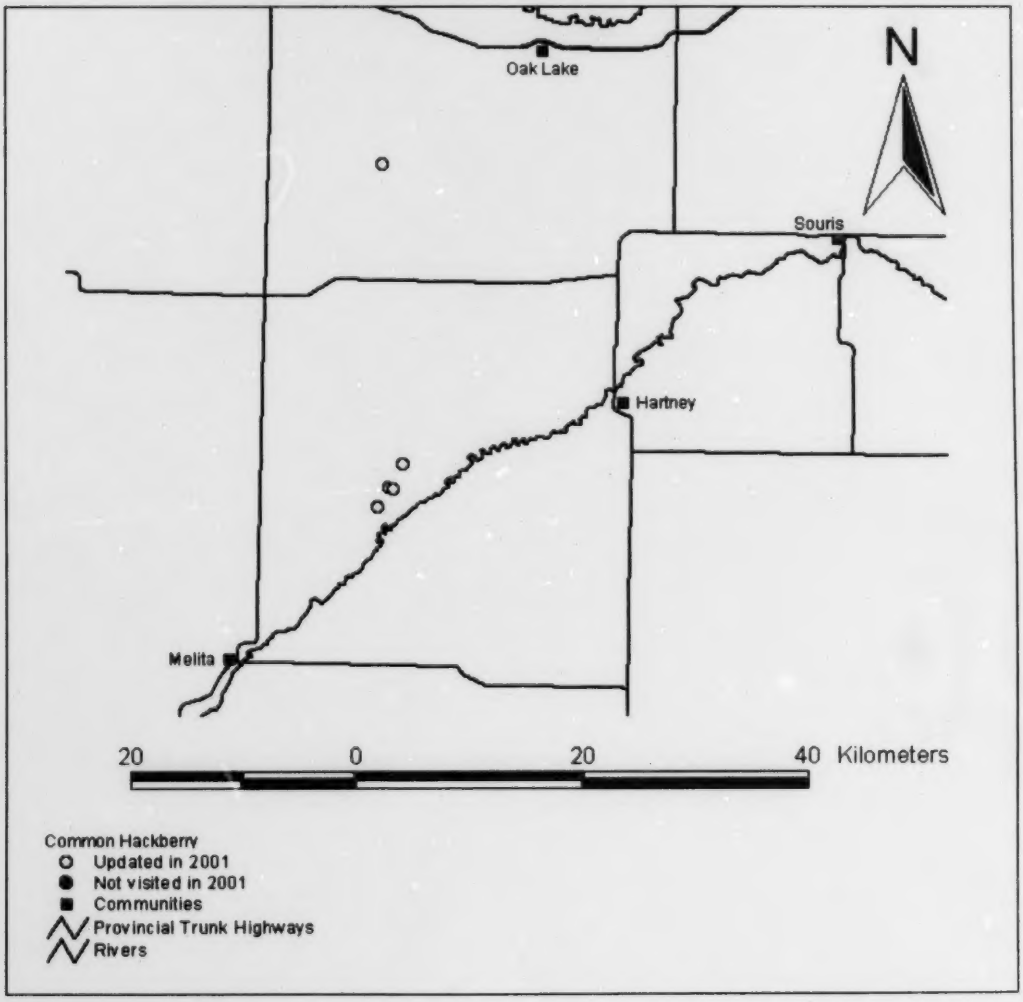


Figure 4. Known occurrences (recent and historic) of common hackberry (*Celtis occidentalis*) in southwestern Manitoba. Populations at Delta Marsh are not shown.

Silky Prairie-clover (*Dalea villosa* var. *villosa*)

COSEWIC: Threatened, MESA: not listed, Conservation Status Ranks: G5T?, N2, S2

Description and Habitat Preferences

Silky prairie-clover is a perennial with woody, branching stems. Leaves are compound, with 7-17 leaflets covered in fine silky hairs. Pinkish purple flowers are packed into a dense spike at the top of the stem.

Silky prairie-clover grows on open to partially vegetated sand dunes. Generally, it prefers south- to southwest-facing slopes. Distribution in Manitoba is limited to sandhills of southwestern Manitoba (Figure 6).

Data collected in 2001

Staff of the Manitoba CDC updated several occurrences of silky prairie-clover in 2001. Potential habitat was surveyed in the Lauder, Portage, and Oak Lake Sandhills; a new population was recorded from the Oak Lake Sandhills.

Marjorie Hughes (2001) enumerated populations of silky prairie-clover throughout southwestern Manitoba. Elizabeth Punter inventoried populations of silky prairie-clover at Portage Sandhills Wildlife Management Area, Lauder Sandhills (WMA and MHHC property), and Spirit Sands in 1999 and 2000. These populations were relocated, along with populations at Treesbank, from which no specimens of silky prairie-clover had been reported since 1953, and Sewell Lake, which had not been recorded since 1991. In addition, new populations were recorded at Jiggins Bluff, and small sub-populations were recorded near known occurrences at the Portage Sandhills and Lauder Sandhills (Hughes 2001).

Marilena Kowalchuk (pers. comm.) also encountered populations of silky prairie-clover this summer in the course of mixed-grass prairie inventory. Small populations were located in a pasture north of the community of Sprucewoods and on four quarter-sections near Treesbank.

Current Protection and Management Issues

Silky prairie-clover habitat is protected in Spruce Woods Provincial Park through the *Provincial Parks Act*. Vehicle use is restricted in the Portage Sandhills WMA to protect the sand dunes; however, this is difficult to enforce in the absence of constant policing, and trails across the dunes provide evidence that there is vehicular traffic within the WMA. The areal extent of open sand continues to decline in the absence of management strategies, such as controlled burns or light grazing, to inhibit encroaching shrubby vegetation.

Silky prairie-clover habitat is susceptible to leafy spurge (*Euphorbia esula*) invasion. Efforts to control spurge at the MHHC property in the Lauder Sandhills (Figure 5) have focused on biological control. Both black-dot spurge beetles (*Aphthona nigriscutis*) and spurge hawk moth larvae (*Hyles euphorbiae*) were observed on this tract of land in 2001. Further research is necessary to determine whether these methods are effective in controlling spurge at this site.

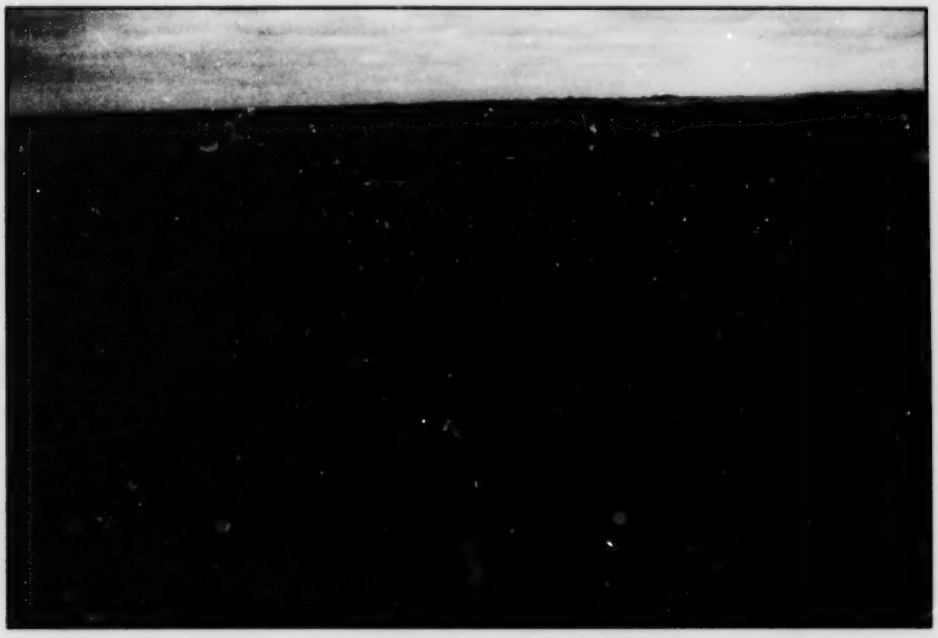


Figure 5. Manitoba Habitat Heritage Corporation property at the Lauder Sandhills. Silvery plants in the foreground are silky prairie-clover (*Dalea villosa* var. *villosa*).

Future work required

A status summary report for silky prairie-clover is currently in preparation for the Manitoba Endangered Species Advisory Committee. Conservation agreements with landowners, as well as the implementation of management techniques that promote the maintenance of open sand, would help to ensure the continued presence of silky prairie-clover in Manitoba.

Permanent plots in areas affected by leafy spurge could provide information on silky prairie-clover's ability to compete with this aggressive weed. Where biological control agents have been put in place, monitoring is required to determine if these agents are effective at controlling spurge, or if other integrated pest management strategies are required.

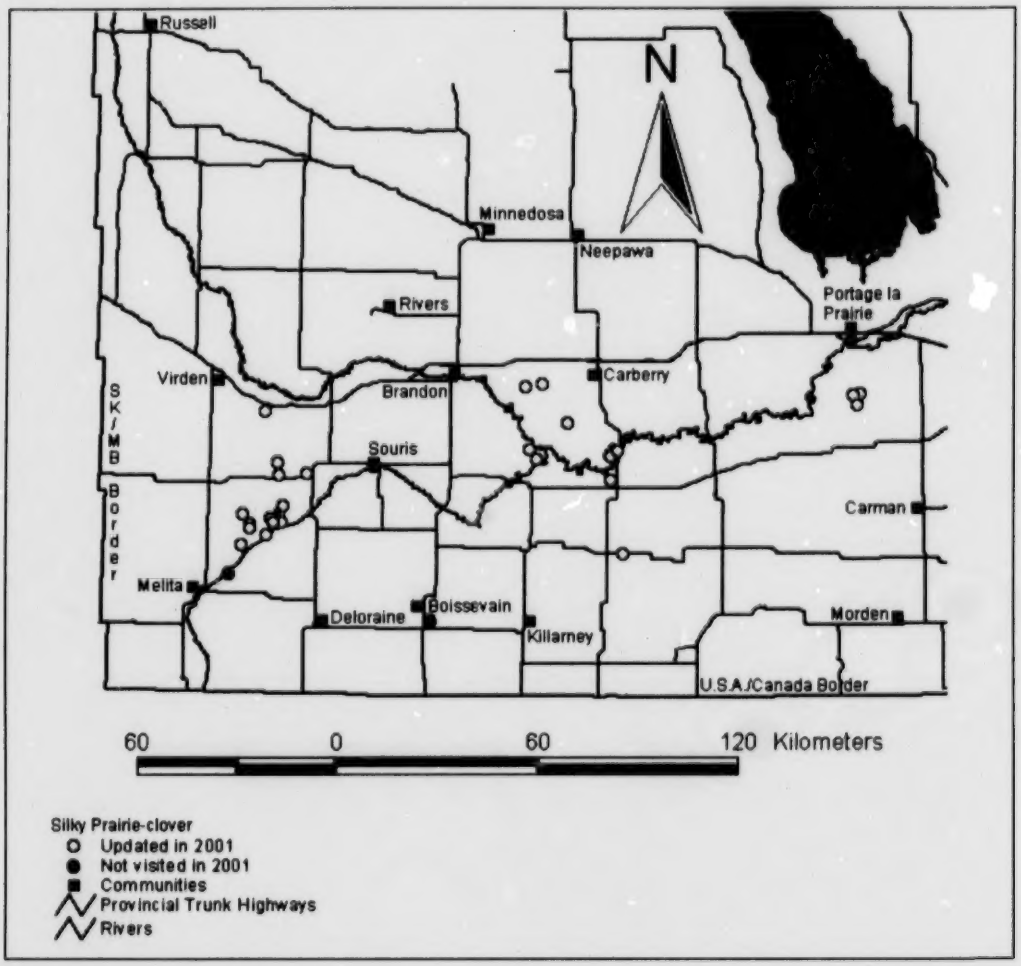
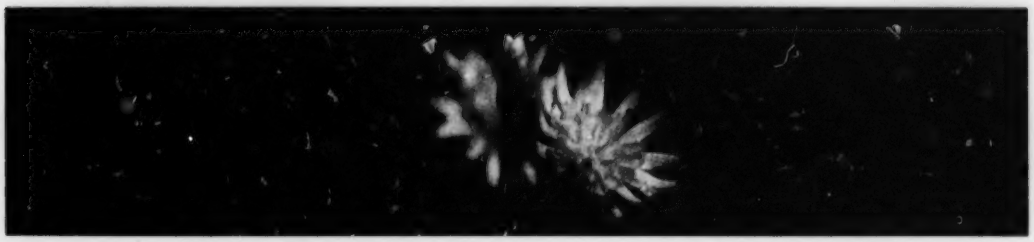


Figure 6. Known occurrences (recent and historic) of silky prairie-clover (*Dalea villosa* var. *villosa*) in Manitoba. Occurrences surveyed in 2001 are indicated.

Two-flowered Dwarf-dandelion (*Krigia biflora*)

COSEWIC: not listed, MESA: not listed, Conservation Status Ranks: G5, N2, S1



Description and Habitat Preferences

Two-flowered dwarf-dandelion (family Asteraceae) is a perennial with several orange dandelion-like flowers atop the stem. The plant exudes milky sap when the stem is broken, similar to sow thistles (*Sonchus* spp.). A double pappus distinguishes *Krigia* species from similar composite flowers. Fruit is a small dark achene. The stem has few clasping leaves.

Dwarf dandelion occurs in woods, roadsides and fields (Gleason and Conquist 1991). In Manitoba, populations occur in remnant tall-grass prairie near Woodlands and Stuartburn (Figure 8).

Data Collected in 2001

Road allowances in the Rural Municipality (R.M.) of Woodlands were surveyed where two-flowered dwarf-dandelion was known to occur, based on information available in the Manitoba CDC database. In addition, roadside ditches near known occurrences were surveyed. The known range of this species was extended northwards by approximately 10 km. Information collected in 2001 indicates that this species occupies an area nearly 30 km in length along Provincial Roads 322 and 416.

CDC staff did not locate an occurrence reported from Teulon in 1929 (White and Johnson 1980) in 2001. An occurrence reported from east of Harperville in 2000 was not visited because roads in the area were washed out due to high water levels.

Current Protection and Management Issues

Several populations occur on the Manitoba Tall Grass Prairie Preserve, where management practices include burning and grazing to reduce encroaching shrubs and litter build-up. Populations on the Preserve are likely protected in the long term. Other populations, especially in R.M. of Woodlands are not currently protected by legislation or by landowners. The effect of high water levels in 2001 (Figure 7) on dwarf-dandelion is not known, and requires investigation.

Figure 7. High water levels in the Rural Municipality of Woodlands on June 29, 2001.

Future Work Required

A status summary report is currently in preparation for the Manitoba Endangered Species Advisory Committee. More research is required on the biology and ecology of this species, especially to determine pollinators and limiting factors. It is not known whether dwarf dandelion populations are stable, increasing, or decreasing.

Based on aerial photos from the R.M. of Woodlands, it seems likely that this species also occurs on private land next to the ditches where it was found. With landowner permission, these areas should be inventoried.

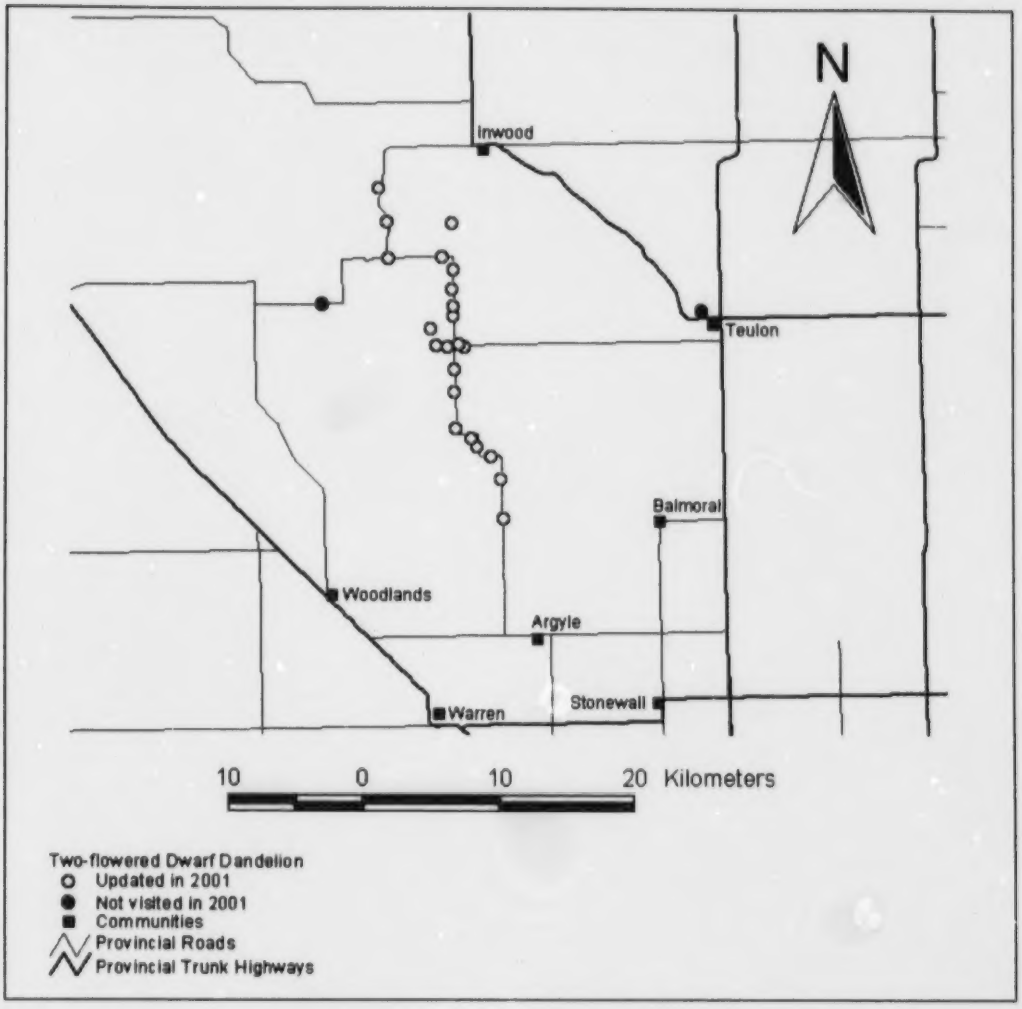
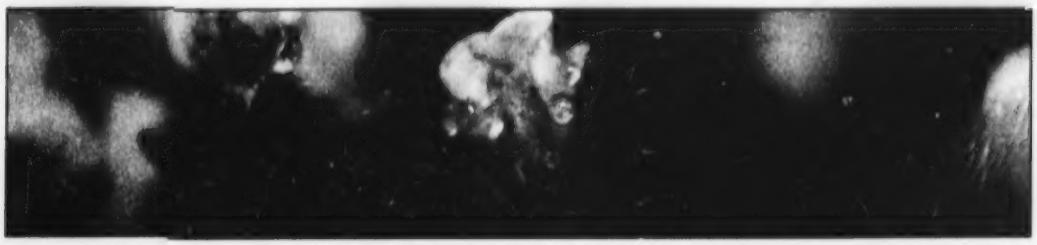


Figure 8. Known occurrences (recent and historic) of two-flowered dwarf-dandelion (*Krigia biflora*) near Woodlands. Occurrences surveyed in 2001 are indicated.

Round-leaf Monkey-flower (*Mimulus glabratus*)

COSEWIC: not listed, MESA: not listed, Conservation Status Ranks: G5, N2, S1



Description and Habitat Preferences

Round-leaf monkey-flower (family Scrophulariaceae) is a small, low, branching and mat-forming perennial wetland plant (Larson 1993). Leaves are generally round, 0.8-3.0 cm wide, and pubescent when young but becoming smooth with age. The small (0.9-1.5 cm long), bright yellow flowers occur in the axils of the oppositely-arranged leaves. Flowering occurs from July to August. There are four varieties recognized, but the only one in Manitoba is var. *jamesii* (Kartesz 1999).

The species is found in seepage areas, normally in close physical contact with flowing cold spring-water. In Manitoba, prior to the results reported here, the species was known only from near Shilo and one location in Spruce Woods Provincial Park (Figure 10). One record from near Rock Lake, now known to be false, also existed in the CDC database.

Data Collected in 2001

The relocation of existing records was attempted. A search of the spring complex southwest of Shilo (Wigle Springs), where two historic (1951 and 1959) occurrences were known from, proved unsuccessful. The herbarium label states that one specimen (WIN 31607) was collected from the base of a sandy cliff, which was not located. A population at the springs at the 'Hogsback' in eastern Spruce Woods Provincial Park, last seen in 1993, was confirmed.

Springs on the north shore of Rock Lake were surveyed unsuccessfully. Later examination of the herbarium specimen at the Manitoba Museum of Man and Nature (MMMN 30866) revealed that the location information from this 1993 specimen was labelled 'Spruce Woods Provincial Park. Natural springs, Hogsback'. The only 'Hogsback' listed in the Manitoba Gazetteer is at Rock Lake; therefore, it appears that the reference to Rock Lake was added during transcription. Parks Branch maps and brochures identify the Hogsback at Spruce Woods Provincial Park. This specimen is in fact a collection from the known Hogsback population, and the record in the CDC database at Rock Lake has been deleted.

As most known populations in Manitoba are found in spring complexes adjacent to the Assiniboine River in sandhill areas, searches for new populations focused on these features. Seepage of water in these areas, and subsequent flow toward the river has resulted in the erosion of the sandhills and the subsequent formation of a 'bowl' formation as sand falls down unvegetated banks and is washed away. Using aerial photographs, topographic maps, and a toponymic database, major spring complexes in southwestern Manitoba were identified. These areas were accessed by road where possible, as well as by foot and canoe. Numerous additional riverbank springs were surveyed by canoe on the Assiniboine River between the Stockton Ferry crossing and the western end of Spruce Woods Provincial Park. One spring along the Souris River was checked as well. Surveying took place July 17 to August 10, coinciding with flowering times.

New round-leaf monkey-flower populations were discovered at three locations, along the Assiniboine River:

- the Devil's Punch Bowl and a smaller spring complex immediately southwest, Spruce Woods Provincial Park (Figure 9);
- a spring complex on the south edge of CFB Shilo, east of the confluence of the Souris and Assiniboine Rivers;
- private property on the south side of the Assiniboine River north of Glenboro.

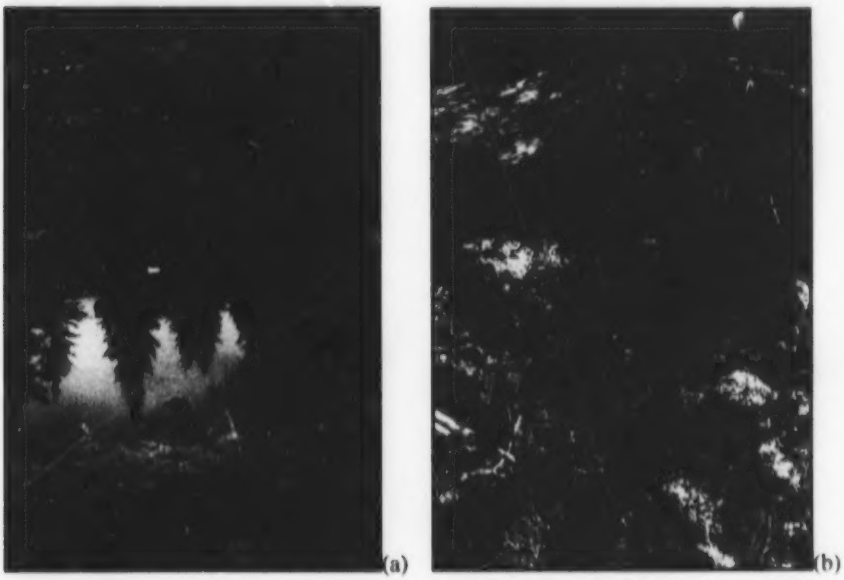


Figure 9. The Devil's Punch Bowl, Spruce Woods Provincial Park (a). Round-leaf monkey-flower (*Mimulus glabratus*) is abundant in the mossy (*Calliergon* sp.) apron around the pond (b).

Current Protection and Management Issues

Populations at the Hogsback and Devil's Punch Bowl are offered protection through the *Provincial Parks Act*. Other known populations are currently unprotected. A species status summary report for the Manitoba Endangered Species Advisory Committee is currently in preparation. A drop in aquifer levels could affect the springs in which the species lives. Extensive irrigation of corn, potatoes, and other crops occurs in the area. Since CFB Shilo and Spruce Woods Provincial Park occupy large tracts of land, it is unlikely that groundwater levels in the area from which the species is known will be affected (Frank Render, Manitoba Conservation, pers. comm.).

Future Work Required

Field work in 2001 focused on the confirmation of known populations, and the search for new ones. Only cursory examinations of population size, habitat, and potential threats were made; more detailed research into these areas in needed.

The Wigle Springs complex is quite large, heavily wooded with willow and dogwood, and supports a thick herb layer. The identification of spring headwaters is difficult. Landing by canoe and working up the spring-fed stream outlet to the Assiniboine River may increase the chance of detecting the headwaters where round-leaf monkey-flower is usually found. The possibility of monkey-flower occurrences along the Assiniboine River west of Brandon exists and should be investigated.

Parks staff and landowners/land managers should be made aware of the presence of this species, its very limited distribution, and habitat preferences. Management techniques that minimize impacts on these populations should be discussed and encouraged.

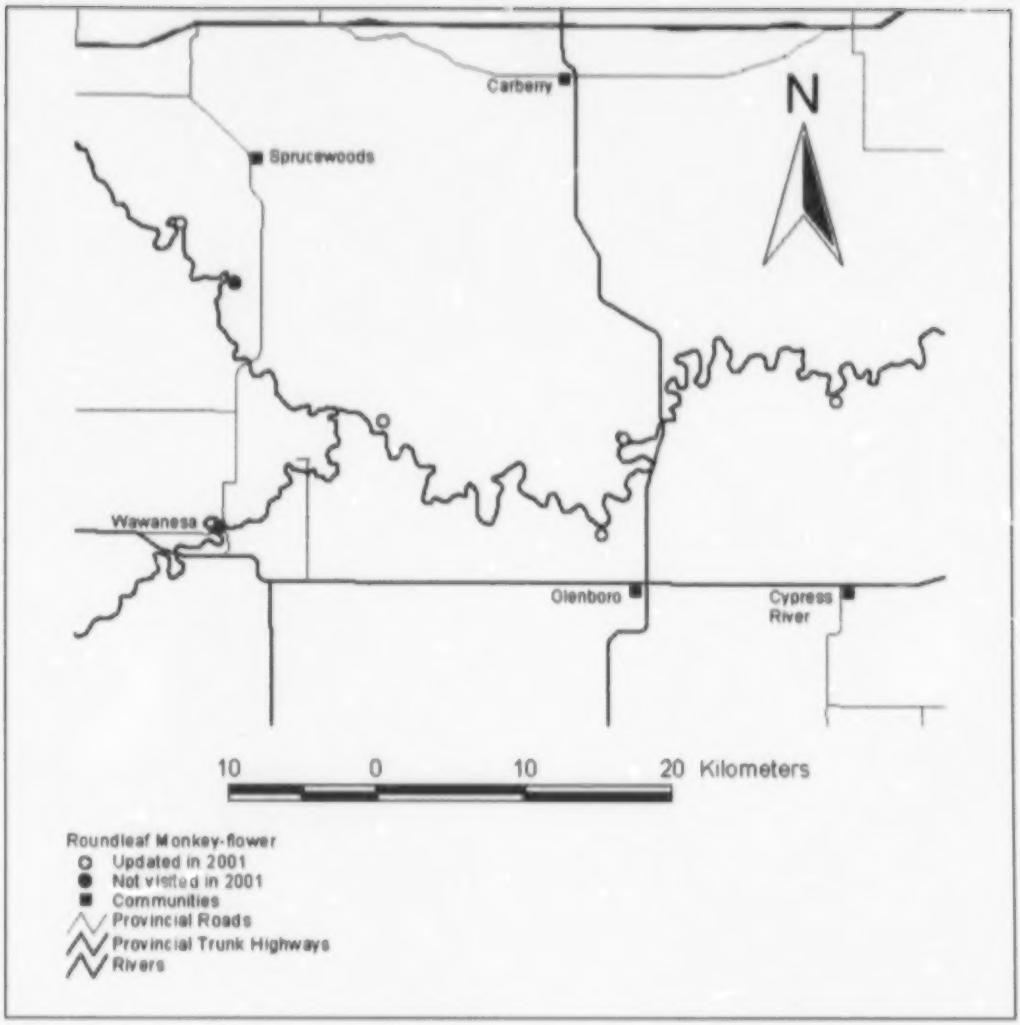


Figure 10. Known occurrences (recent and historic) of round-leaf monkey-flower (*Mimulus glabratus*) in Manitoba. Occurrences surveyed in 2001 are indicated.

Great Plains Ladies'-tresses (*Spiranthes magnicamporum*)

COSEWIC: not listed, MESA: Endangered, Conservation Status Ranks: G4, N3, S1?

Description and Habitat Preferences

Great Plains ladies'-tresses is a herbaceous perennial that can grow to a height of 12 to 38 cm (4.5 to 15 inches). Leaves are typically absent in early September at flowering time. The flowers are heavily scented, with an aroma that has been described as similar to vanilla or freshly mown hay. The inflorescence is 2.5 to 10.0 cm long, with 13 to 48 creamy white flowers spiralling up the stem in two or more vertical rows. Each individual flower is about 1.5 cm long with a fleshy lower lip that is yellowish in the centre.

Great Plains ladies'-tresses typically grows in open calcareous prairies (Gleason and Cronquist 1991). This species has an extremely limited distribution within the province, with occurrences in southern Manitoba from Carlowrie to the Minnesota border, mostly within the Roseau River valley (Figure 12).

Data collected in 2001

The authors visited all populations of Great Plains ladies'-tresses outside the boundaries of the Tall Grass Prairie Preserve. The staff at the Preserve monitor populations around Gardenton and record estimates of population numbers at those sites.

One previously-known occurrence of Great Plains ladies'-tresses was visited and was not re-located, possibly due to very recent mowing of the roadside ditch and adjacent field (Figure 11). A small population of orchids was found in a nearby roadside ditch. A larger population was located near the Roseau Rapids First Nation. This occurrence consisted of fewer than 400 stems in roadside ditches along a one-kilometre stretch of gravel road. Nearby roadside ditches with similar vegetation were examined, and no orchids were found more than a kilometre away from a previously known population; therefore, no new occurrences were mapped.

Figure 11. Great Plains ladies'-tresses habitat in a freshly mown roadside ditch near Tolstoi.

Current Protection and Management Issues

This species is listed as Endangered in Manitoba by the *Endangered Species Act*. Once a species has been declared by regulation under the Act, it is unlawful to destroy, disturb or interfere with the species or its habitat.

Mowing or haying at critical stages of development can damage orchids and prevent reproduction. Many plants occur in road allowances where they are subject to disturbance from road maintenance. Occurrences on the Manitoba Tall Grass Prairie Preserve are monitored annually, and management practices are timed to minimize impacts on the Great Plains ladies'-tresses.

Future work required

Great Plains ladies'-tresses flower late in the growing season; grazing or mowing at the critical flowering stage prevents the orchid from reproducing. Providing private landowners and Rural Municipalities with information on Great Plains ladies'-tresses would encourage sound management practices.

Populations of ladies'-tresses fluctuate from year to year. The reason for this is not known and requires further research.

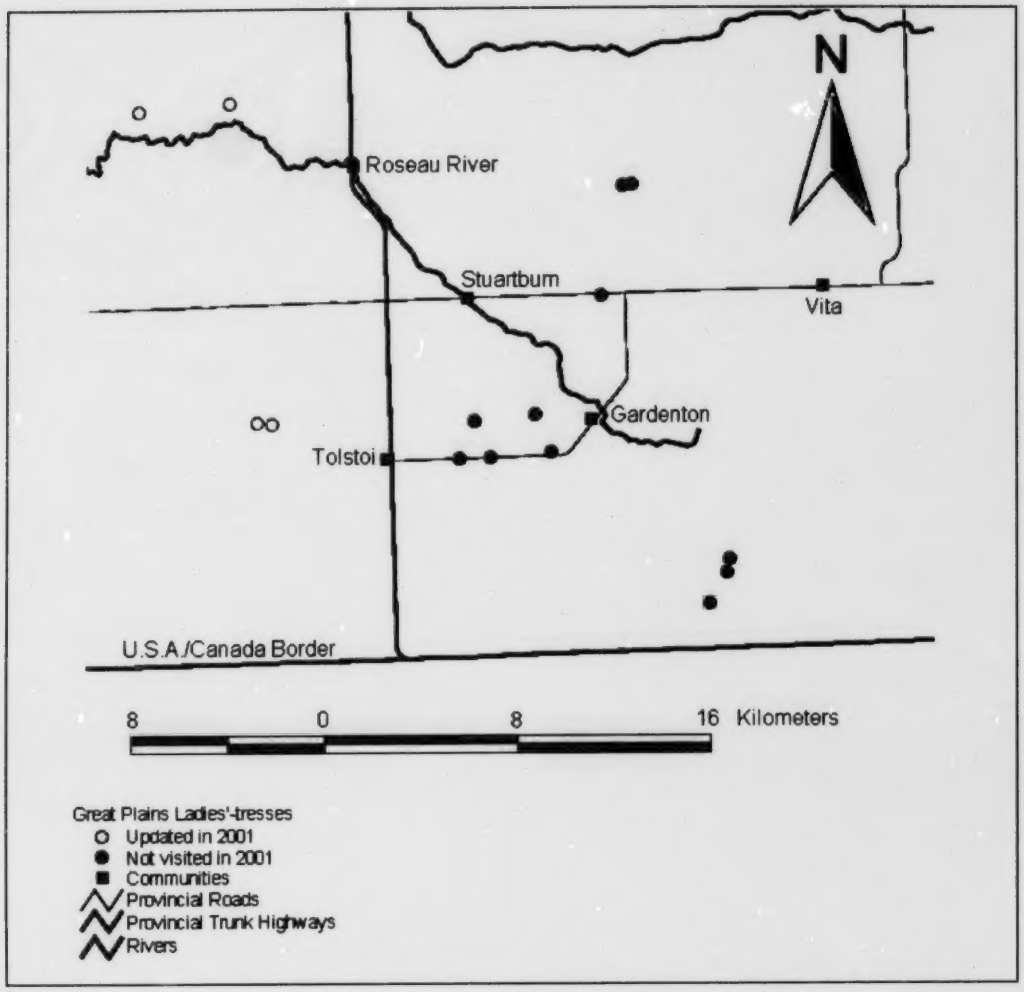


Figure 12. Known occurrences (recent and historic) of Great Plains ladies'-tresses (*Spiranthes magnicamporum*) in Manitoba. Occurrences surveyed in 2001 are indicated.

Western Silvery Aster (*Symphyotrichum sericeum = Aster sericeus*)

COSEWIC: Threatened, MESA: Threatened, Conservation Status Ranks: G5, N2, S2

Description and Habitat Preferences

Western silvery aster (family Asteraceae) is a distinctive, late summer herbaceous perennial that grows to a height of 30 to 70 cm (12 to 28 inches). Plants are characterized by several sparsely branched, brittle stems arising from a swollen woody rootstock. The lance-shaped leaves are densely silky-silvery hairy, and most lower leaves die and fall off by the time flowering occurs. Flowers appear from early August to mid-September and are violet to pink in colour.

In Manitoba, the western silvery aster can be found in dry prairies, fields, and openings in bur oak/trembling aspen woodlands (Punter and Ford 1999). Western silvery aster is most abundant when growing as part of relatively undisturbed grassland, but populations are also seen at disturbed sites such as roadside ditches and adjacent to gravel pits. In Manitoba, populations occur in remnant tall-grass prairie on course-textured (gravelly and/or sandy), calcareous, and well to moderately well drained soil, from the U.S. border to Birds Hill (Figure 14).

Data Collected in 2001

Thirteen of 22 previously known occurrences of western silvery aster were surveyed in early to mid-September. Searches at the Living Prairie Museum in Winnipeg were unsuccessful; the species has not been observed at this site since 1970. Three new occurrences were discovered by Laura Reeves (Manitoba Conservation, pers. comm.) near Gardenton; the authors surveyed these sites, collected a voucher specimen, and documented population size, habitat, and threats. These new sites were on the north side of the Roseau River, in a narrow strip of native prairie between riparian woodland and cultivation/pasture. Two of these new occurrences were located next to gravel pits. Remnant prairie openings at the north end of Birds Hill Provincial Park were searched; the relatively moist conditions in this region generally result in unsuitable habitat for western silvery aster.

Current Protection and Management Issues

Remnant dry tall-grass prairie containing relatively large populations of western silvery aster is protected within Birds Hill Provincial Park; other populations lie on private land or on road and railway rights-of-way. Most occurrences surveyed in 2001 appear to be threatened by gravel extraction (Figure 13). Many of the populations were situated on the edge of extraction pits, and any further expansion of the gravel pits would eliminate many or all individuals. Populations at Birds Hill Provincial Park are threatened by the encroachment of woody species into prairie openings. Park staff cut swaths around the edges of prairie openings in an attempt to control aspen encroachment (Chris Penner, Manitoba Conservation, pers. comm.). However, late summer cutting can negatively affect western silvery aster populations through the removal of reproductive structures. After conversations with Manitoba CDC staff, Park staff agreed to conduct cutting in late spring/early summer only, and to limit the width of mowing along trails that pass through prairie openings containing western silvery aster.

Figure 13. Western silvery aster (*Symphyotrichum sericeum*) habitat near Gardenton. Note gravel extraction.

Future Work Required

Municipalities responsible for right-of-way maintenance at western silvery aster sites, as well as landowners adjacent to these populations, should be contacted and made aware of the presence of this rare species, its legal status under the Manitoba *Endangered Species Act*, and management techniques that minimize impacts on these populations. Land management techniques that continue to promote the maintenance of native prairie at these sites will help to ensure the survival of western silvery aster populations. As most

populations are under immediate threat from gravel extraction, contacting and establishing a positive relationship with responsible parties should be of paramount importance. Gravel extraction has already resulted in the apparent extirpation of some populations of western silvery aster in Manitoba (Punter 1997).

Additional intensive searches of xeric tall-grass prairie remnants during late August-early September may yield new occurrences of this species.

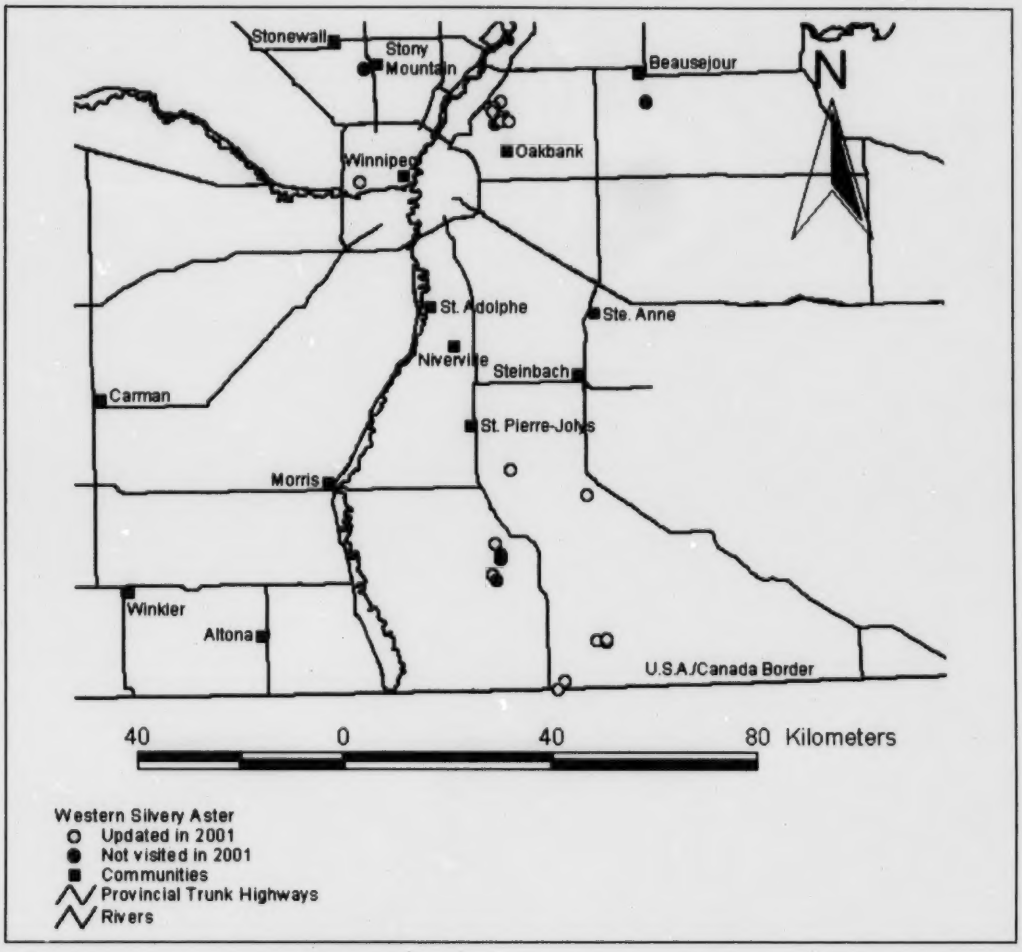


Figure 14. Known occurrences (recent and historic) of western silvery aster (*Symphyotrichum sericeum*) in Manitoba. Occurrences surveyed in 2001 are indicated.

Other Species Targeted

Three-leaved Milkvetch (*Astragalus gilviflorus*)

The CDC database catalogues five occurrences of three-leaved milkvetch (G5, N?, S1) in Manitoba. Four records are located in the extreme southwestern corner of Manitoba, and one is a general record from 'Manitoba' (WIN 2674). One population, located south of Melita on private property and last observed in 1983 (WIN 40669), was revisited in 2001. Searches were made on July 15, with the aid of the landowner. The population was not relocated. Future surveys should be conducted between late May and early June to coincide with flowering.

Pregnant Sedge (*Carex gravida*)

Only two occurrences of pregnant sedge (G5, N1, S1) are known from Manitoba, both from the Souris River Valley south of Melita. Despite intensive searches of both locations, the species' presence was not confirmed. As the presence of reproductive structures is required for positive identification, seed dispersal prior to surveying on July 25 may have prevented detection. Future surveys of this rare species should be conducted earlier in the growing season.

Ram's-head lady's-slipper (*Cypripedium arietinum*)

Ram's-head lady's-slippers (G3, N3, S2?) occur in the southeastern corner of Manitoba, and are rare throughout their entire range. Occurrences near the junction of highways 1 and 44 were not located in 2001. Native Orchid Conservation Inc. conducted a survey of southeastern Manitoba timber sales. This survey located three populations of ram's-head lady's-slippers between June 12 and August 22, 2001 (Ames 2001). These occurrences were mapped, and information on these populations was added to the CDC database.

Small White Lady's Slipper (*Cypripedium candidum*)

Three widely separated populations of small white lady's-slippers (G4, N2, S1, COSEWIC: Endangered, MESA: Endangered) are found in Manitoba. One population, near Gardenton, is annually monitored by Tall Grass Prairie Preserve staff. This population, along with other populations around Brandon and St. Laurent were surveyed in June 2001 (Hughes 2001). Data collected was added to the CDC database. The authors surveyed one occurrence near Kleefeld in May, and again in September when one seed pod was observed. Threats to the small white lady's-slipper include digging and picking, alteration in drainage and road maintenance for those orchids in roadside ditches, and hybidisation with the yellow lady's-slipper (*Cypripedium parviflorum*).

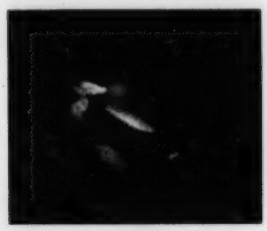
Dutchman's Breeches (*Dicentra cucullaria*)

Only one population of dutchman's breeches (G5, N?, S1) is known to occur in Manitoba. On May 11 the authors joined staff of the Manitoba Museum of Man and Nature to survey this population, located on a point of land on the west side of Whitemouth Lake. Karen Johnson, recently retired Manitoba Museum of Man and Nature botanist, has monitored this population since 1988 (K. Johnson, Manitoba Museum of Man and Nature, pers. comm.). The site is characterized by a mature black ash/Manitoba maple stand, and is held privately. Continued monitoring of Dutchman's breeches in Manitoba, and the maintenance of good relations with the landowner, is uncertain given the retirement of Dr. Johnson.

Northern Prairie Skink (*Eumeces septentrionalis*)

Extensive surveys were conducted for northern prairie skink (G5, N2, S2) a COSEWIC species of Special Concern. Appropriate habitat was surveyed in the Lauder, Routledge, Oak Lake, and Kemnay Sandhills, as well as numerous smaller sandhill complexes. Surveying involved searching the underside of boards, fallen wood, and other appropriate skink cover encountered (c.f. Bredin 1989). The relocation of two previously established skink monitoring sites, consisting of artificial cover (plywood boards and sheet metal) placed in potential skink habitat, was unsuccessful. Other searches were negative, as well, although tracks suspected to be that of a skink were observed at one location in the Routledge Sandhills. Ken De Smet and Darcy Falk, with the aid of Errol Bredin, established artificial skink cover at 40 locations in the Lauder, Oak Lake, and Routledge sandhills, recording detailed location information to aid in future monitoring (Ken De Smet, Manitoba Conservation, pers. comm.). It is anticipated that if skinks are present in these areas they will be attracted to the artificial cover, greatly increasing the possibility of detection in future surveys.

Eastern Loggerhead Shrike (*Lanius ludovicianus migrans*)



Suitable eastern loggerhead shrike (G5T3Q, N?, S1, COSEWIC: Endangered, MESA: Endangered) habitat in one township (2-8E) was surveyed as part of the Eastern Manitoba Loggerhead Shrike Survey co-ordinated by the Eastern Manitoba Loggerhead Shrike Recovery Action Group. Surveying took place on May 25, and involved searching all suitable and accessible habitat within the township. The negative results of this survey (no shrikes were detected) contribute to a better understanding of the status of eastern loggerhead shrike in Manitoba.

Duckweed (*Lemna turionifera*)

One of 3 duckweed species in Manitoba, *L. turionifera* (G5, N?, S1) is known from only one location, 2 km west of Coulter. While this location was visited and *Lemna* sp. sampled, positive identification as *L. turionifera* could not be made due to the absence of turions, a distinguishing characteristic. Turions are vegetative buds that sink and

overwinter in pond bottom sediments and debris. Further attempts at identifying collected individuals revealed a disagreement in the literature concerning the supposed rarity of this species in Manitoba. Landolt (2000) reports *L. turionifera* as a wide ranging species in Manitoba and *L. minor* (G5, N?, S5) as absent. The ranges presented in Landolt's treatment differ significantly from those reported by Scoggan (1957) and Kartesz (1999), however, and could significantly impact the subnational status ranking of these species in Manitoba. A resolution to this issue should be sought prior to future surveys.

White-Flowered Desert Parsley (*Lomatium orientale*)

White-flowered desert parsley (G5, N2, S1) has been identified as a priority species for examination by COSEWIC. Time limitations prevented a thorough examination of this species in 2001. Several areas were identified as potential habitat for white-flowered desert parsley, and will be targeted for searches in 2002, pending landowner approval.

Fragant Water-Lily (*Nymphaea odorata*)

All but two of the 12 wild fragrant water-lily populations (G5, N5, S2) recorded in the CDC database occur within the Bird River/Whiteshell River watershed. A new population was surveyed along the shores of the Whiteshell River on September 1. Multiple stands were observed in slow-moving sections of the river, from P.R. 307 to Twin Falls. In addition, a population at the 'Lily Pond' along Highway 44 in Whiteshell Provincial Park, first observed in 1934, was confirmed as extant.

Northern Adder's-Tongue (*Ophioglossum pusillum*)

Northern adder's-tongue (G5, N?, S1) is known from only one location in Manitoba on the Tall Grass Prairie Preserve. This occurrence was visited in 2001 and confirmed to remain extant at that location. No additional populations were discovered. Northern adder's-tongue grows in open fens, marsh edges, pastures, and grassy shores and roadside ditches (Flora of North America Editorial Committee 1993). Intensive searches of the southeast corner of the province may yield additional occurrences of northern adder's-tongue. It has likely not been reported because it is small and inconspicuous.

Eastern White Pine (*Pinus strobus*)

Eastern white pine (G5, N5, S2) occurs only in the southeastern portion of the province. This species is common in eastern regions on well-drained fertile soil, and reaches the western extent of its distribution in southeastern Manitoba. Populations in the area of Moose Lake, including those at the Moose Lake Ecological Reserve, were visited in 2001 and updated in the CDC database. No new populations were discovered.

Riddell's Goldenrod (*Solidago riddellii*)

Riddell's goldenrod (G5, N3, S2, COSEWIC: Special Concern, MESA: Threatened,) occurs east of the Red River in Manitoba, from near Ross south to the Minnesota border. Populations on the Tall Grass Prairie Preserve have excellent prospects for long-term survival; however, other occurrences in roadside ditches are at risk due to road maintenance and herbicide spraying. Eight known occurrences of Riddell's goldenrod (based on information in the CDC database) were visited in 2001. Six populations were re-located; two others were not found despite thorough searching.

Western Spiderwort (*Tradescantia occidentalis*)

Western spiderwort (G5, N1, S1, COSEWIC: Threatened, MESA: Threatened) has high population numbers, but its distribution is extremely limited within Canada and Manitoba. All known occurrences were visited in 2001 and plants were enumerated at each site (Hughes 2001). The CDC database was updated to reflect new information. This species requires very specific habitats to survive; it occurs mostly on the south to southwest aspects of partially destabilized sand dunes. Much of the available habitat for spiderwort is invaded by leafy spurge. Other threats to this species include encroachment of shrubby vegetation, overgrazing by cattle, petroleum exploration, and off-road vehicle traffic. A portion of the critical habitat for this species is voluntarily protected by the landowner.

Culver's Root (*Veronicastrum virginicum*)

Culver's root (G5, N2, S1, MESA: Threatened) occurrences are concentrated in the Roseau River valley at the edges of prairie openings in aspen stands. New information was gathered on most known records in the province. Tall Grass Prairie Preserve staff record the presence of Culver's root annually at known locations on the Preserve. Populations on the Preserve have excellent prospects for long-term survival. Other populations occur along roadsides, and are at risk from road maintenance. High water levels in southeastern Manitoba in 2001 created saturated soil conditions within much of the Culver's root habitat. It is not known how the plants will be affected if high moisture conditions persist.

Rare Species Surveyed Incidentally

Information on 14 rare plant and animal species was collected incidentally in the course of field work in 2001. These species were encountered while conducting surveys for targeted species; their presence was recorded because of high conservation status ranks or their COSEWIC or MESA status. A summary is presented in Table 1.

Table 1. CDC SRANK, status, and number of occurrences surveyed for incidentally-encountered species surveyed in 2001.

Scientific Name	Common Name	SRANK	Cosewic Status	MESA Status	Number of Known Occurrences Updated	Number of New Occurrences
Agalinus tenuifolia	Slender False-foxglove	S2S3				1
Andropogon hallii	Sand Bluestem	S1				11
Arisaema triphyllum	Jack-in-the-Pulpit	S2				1
Astragalus neglectus	Cooper's Milkvetch	S1			1	
Athene cunicularia	Burrowing Owl	S1B, SZN	Endangered	Endangered	1	
Bouteloua curtipendula	Side-Oats Grama	S2			2	
Buteo regalis	Ferruginous Hawk	S2B, SZN	Special Concern	Threatened	1	
Cyperus schweinitzii	Schweintz's Flatsedge	S2				3
Escobaria vivipara	Pincushion Cactus	S2				3
Odocoileus hemionus	Mule Deer	S3		Threatened		1
Osmorhiza claytonii	Hairy Sweet-Cicely	S2				1
Plagiobothrys scouleri	Meadow Popcorn-flower	S1				1
Uvularia sessilifolia	Sessile-leaf Bellwort	S2			1	

Conclusions

The status of a species establishes its priority for conservation. In order to determine status, it is vital to gather information on population size, number of occurrences, geographic distribution, trends in distribution, threats to the population, and threats to habitat. It is also important to contend with taxonomic confusion, perhaps through genetic studies, where necessary. Incomplete or incorrect data could have serious repercussions, especially if threats are not identified and addressed. Large groups of species, non-vascular plants, for example, lack even the most basic information. Many aspects of rare species biology and ecology remain unknown.

Information on reasons for concern, implications on land use, recovery process, and possible economic incentives, such as conservation easements should be provided to the public. Relevent stakeholders must support habitat preservation in order to achieve success. Groups to engage in action plans include private landowners, non-government organisations (e.g. Nature Conservancy Canada), and all levels of government (federal, provincial, and municipal). Activities need to be co-ordinated and linked to recovery objectives to avoid duplication of effort, to focus efforts on conservation priorities, and to identify gaps in knowledge. Development of recovery strategies for species at risk is crucial. Currently, recovery strategies tend to focus on single species. Quality and availability of habitat is a major limiting factor in the recovery. Ecosystem or landscape level recovery plans may play a vital role in preserving areas with concentrations of rare species.

Protection of critical habitat alone will not ensure long-term survival of a species. It is important to continue gathering baseline data, helping to identify new threats as they arise. This is especially crucial in populations with limited distributions where localized disturbances could have a negative impact on the entire population.

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Appendices

Appendix A. Conservation Data Centre Ranks

Adapted from the Manitoba CDC website, 1998

Species are evaluated and ranked by the Conservation Data Centre on the basis of their range-wide (global - G) status, nation-wide (national – N) status, and province-wide (subnational - S) status according to a standardized procedure used by all Conservation Data Centres and Natural Heritage Programs. These ranks are used to determine protection and data collection priorities, and are revised as new information becomes available.

For each level of distribution—global, national, and provincial—species are assigned a numeric rank ranging from 1 (very rare) to 5 (demonstrably secure). This reflects the species' relative endangerment and is based primarily on the number of occurrences of that species globally, nationally, or within the province. However, other information, such as date of collection, degree of habitat threat, geographic distribution patterns and population size and trends, is considered when assigning a rank. For example, the Green Frog (*Rana clamitans*) is ranked G5, S2. That is, globally the species is abundant and secure, while in Manitoba it is rare and may be vulnerable to extirpation. For more information on conservation status ranks, please visit:

http://web2.gov.mb.ca/conservation/cdc/.

Appendix B. Summary of Dragonfly Collections, May 31-September 19, 2001

Collecting was done opportunistically while surveying for other species. Attempts were made to collect one individual of each species encountered per site. Some sites were visited multiple times; dragonflies were collected during each visit.

Specimens were preserved following the procedure outlined in the Manitoba Dragonfly Survey Citizen's Monitoring Guide (Duncan 2001). A key to the location codes used on specimen envelopes was prepared and habitat information summarized for each location.

Location	# Collected
Lauder Sandhills	40
MHHC Mixed-grass Prairie Preserve	3
Oak Lake Sandhills	34
Other Sandhills (Kemnay, Deleau, Spirit Sands)	19
Roseau River Valley	6
Souris River Valley (South of Melita)	18
Northwest Angle Provincial Forest	29
Total # Dragonflies Collected	149